Evolutionary Acquisition

EA Template

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Evolutionary acquisition (EA) is an acquisition approach that defines, develops, produces or acquires, and fields an initial hardware or software increment (or block) of operational capability based on technologies demonstrated in relevant environments, time-phased requirements, and demonstrated manufacturing or software deployment capabilities in a shorter period of time, followed by subsequent increments of capability over time that accommodate improved technology and allow for full and adaptable systems over time. The objective of EA is to accommodate the needs of the warfighter more quickly, more precisely, and more economically. This Template is provided to assist the PM and his staff in the preparation of an acquisition strategy. It is intended to assist and should be tailored to specific program circumstances. The use of this EA template is optional.

Evolutionary Acquisition Template

The following information is provided to assist the Program Manager (PM) and his staff in the preparation of an acquisition strategy reflecting an evolutionary approach to systems development and acquisition. The Template is intended to assist the PM and the actions defined in the following sections should be tailored to meet specific program circumstances. While the use of this template is optional, the template may capture both statutory and regulatory requirements reflected in the DoD 5000 series policies.

1. Introduction to Evolutionary Acquisition

Evolutionary acquisition (EA) is an acquisition approach that defines, develops, produces or acquires, and fields an initial hardware or software increment (or block) of operational capability based on technologies demonstrated in relevant environments, time-phased requirements, and demonstrated manufacturing or software deployment capabilities in a shorter period of time, followed by subsequent increments of capability over time that accommodate improved technology and allow for full and adaptable systems over time. Each increment will meet a militarily useful capability specified by the user (i.e., at least the thresholds set by the user for that increment); however, the first increment may represent only 60% to 80% of the desired final capability. The EA concept then calls for incorporating upgrades to these systems later, when the technologies are available. The objective of EA is to accommodate the needs of the warfighter more quickly, more precisely, and more economically.

Under Secretary of Defense (Acquisition, Technology and Logistics) E.C. Aldridge established evolutionary acquisition as one of his key metrics under his first acquisition goal, "achieve credibility and effectiveness in the acquisition and logistics support process." Under this goal, he approved a metric to require, by the end of FY02, 100% of defense programs to incorporate a cost as an independent variable (CAIV) plan and to have an evolutionary acquisition or spiral development plan in place. These plans are to be discrete parts of each acquisition category (ACAT) I acquisition strategy and will be executed throughout the acquisition cycle and updated as necessary.

In a January 2002 memorandum, Under Secretary Aldridge instructed the Reduction of Total Ownership Cost (R-TOC) Working Group to develop templates to be used by DoD program managers as guidelines for the development of these plans. This document is the evolutionary acquisition template developed under that memorandum. An additional document contains a set of CAIV Templates.

Evolutionary acquisition is applicable to all programs and throughout all acquisition phases, including modifications and upgrades in the operations and support (O&S) phase. However, the greatest single point of leverage for EA to affect program requirements, Total Ownership Costs (TOC), schedule, and performance is at the beginning of a program's life cycle. The acquisition strategy should be structured so that it is sufficiently flexible to incorporate upgrades.

Table 1 details the EA related activities and their associated execution times. These actions are generally in the same sequence as the activities discussed in Section 3, and are cross-referenced. This Table shows the general sequence of actions for a new start program. In general, the actions will be similar for programs implementing EA techniques later in the acquisition cycle, but it may be necessary to compress some of these actions.

2. Evolutionary Approach

The acquisition strategy should describe an acquisition approach that defines, develops, produces or acquires, and fields an initial hardware or software increment (or block) of operational capability based on technologies demonstrated in relevant environments, time-phased requirements, and demonstrated manufacturing or software deployment capabilities in a shorter period of time, followed by subsequent increments of capability over time that accommodate improved technology and allowing for full and adaptable systems over time. Each increment will meet a militarily useful capability specified by the user (i.e., at least the thresholds set by the user for that increment); however, the first increment may represent only 60% to 80% of the desired final capability.

3. Evolutionary Acquisition Practices

The following section outlines key issues that should be addressed in developing an evolutionary acquisition strategy. The PM should consider the following in developing the acquisition strategy. The use of this Template is optional, but many of the actions described here are required by law or policy.

Define Evolutionary Requirements

The acquisition strategy must be consistent with the time-phased requirements specified in the Operational Requirements Document (ORD). PMs are encouraged to establish a dialogue with the Requirements Developer as early as possible so a clear understanding

of the requirements can be achieved and to discuss acceptable and militarily useful alternatives where feasible. The CAIV process should be employed to facilitate this dialogue; i.e., any changes to requirements must be approved by the warfighter/user. Requirements documents should define the current increment with some precision but should not attempt to define rigid requirements for subsequent development spirals or blocks.
[Actions A and H, Table 1]

Conduct Acquisition Planning

The acquisition strategy should address acquisition of the operational capabilities associated with the block under immediate consideration. Future blocks of capability should be addressed to the extent they can be described. The acquisition program baseline (APB) objectives and thresholds will be consistent with those specified in the time-phased ORD for the initial block. Subsequent blocks will have their own APBs.
[Action B, Table 1]

Insert Mature Technology

Each block of capability must be based on technology that has been matured to a readiness level that puts the receiving milestone decision authority (MDA) at low risk for systems integration, has been independently assessed consistent with the Technology Readiness Levels described in DoD 5000.2-R, and is acceptable to the cognizant MDA. The acquisition strategy should address technical risk/maturity for each block of development. Technologies essential for future blocks should be identified and monitored.
[Actions C, D, E, and M, Table 1]

Develop Contracting Strategy

An integrated contracting strategy should be developed which accounts for the evolutionary strategy. The source selection plan must determine whether primary emphasis is placed on ability to produce the initial block and/or subsequent blocks of the program. The contracting strategy should:

- Ensure incremental contract phasing for required capability
- Consider technical, management, and business interdependencies between blocks when selecting a source
- Include innovative methods for competitive contracting
- Emphasize the use of modular contracts in which large acquisitions are broken into smaller, more manageable modules
- Define appropriate incentives
- Describe plans to sustain competition throughout program phases and blocks of development.

[Action F, Table 1]

Systems Engineering

The Systems Engineering Master Plan (SEMP) should define the evolutionary approach to meeting system requirements of each block and maintaining configuration control across the entire system. The SEMP should give particular consideration to the feasibility of using a modular open systems architecture approach, in order to allow for affordable and timely integration of new technologies into the current block, future blocks, and retrofits into past blocks of the system.
[Action G, Table 1]

Test and Evaluation

The Test and Evaluation Master Plan (TEMP) should document an integrated test approach consistent with the time-phased requirements for the block in development. Rather than being a "final exam," the tests developed through the EA process should address whether the "new" block provides the militarily useful capability of that block. The PM and test agencies should plan for system regressive testing as new blocks are delivered.

It is important to identify and involve the operational test agency as early as possible in the design process, in order to identify necessary test resources and develop an orderly plan for testing. Modeling and simulation should be an integral part of the test approach.
[Action I, Table 1]

Planning Programming and Budgeting

Each increment or block will be separately fully funded as early as possible. In every case, the block should be fully funded by the time the start of development for that increment or block. This should be scheduled to occur within the first two years of the five-year defense plan (FYDP) under review. Multiple increments or blocks may be funded simultaneously in the same program element. In all cases, each increment should be justified and supported by the capabilities provided over time.

Cost estimates should be developed for the overall capability to be acquired and for each block.

- Identify when updates for future increments will be performed and what data will be necessary
- Develop and document the process to obtain transition funding for future increments as necessary to introduce new technology.

[Actions J and K, Table 1]

Develop Sustainment Strategy

Evolutionary acquisition plans must identify and consider system sustainment issues early in system development, and should be updated for each block. CAIV analyses and

tradeoffs should address ways to reduce O&S costs and improve system readiness and reliability.

The PM should design an integrated support strategy specifically addressing the current block while considering the logistical implications of subsequent blocks. The logistics elements necessary to sustain each block must be identified and acquired. The strategy should promote logistics footprint reduction, cycle time reduction and performance based life cycle management. It is important to ensure that the use of EA does not result in the proliferation of different logistics support requirements for each block of systems. [Action L, Table 1]

4. Subsequent Acquisition Phases

This time sequence described in the previous section and on Table 1 assumes that EA is being implemented on a newly initiated program. Programs that have already passed Milestone B should still attempt to implement evolutionary approaches, though it may be necessary to compress some of the timelines.

Table 1. Evolutionary Acquisition Template

Milestone: A B C					
Action	**Activity**	**Concept & Technology Development**	**System Development & Demonstration**	**Production & Development**	**Support**
A	Develop time phased Operational Requirements Document (ORD)				
B	Develop Evolutionary Approach				
C	Develop increments based on mature technologies				
D	Identify key technologies				
E	Plan for independent technology assessment				
F	Prepare contracting plan consistent with incremental approach – update as necessary				
G	Maintain open system in anticipation of follow-on increments - (SEMP)				
H	Employ CAIV to refine requirements				
I	Prepare Test and Evaluation Master Plan (TEMP) consistent with the time-phased requirements for the block under development				
J	Fully fund each block				
K	Fund follow-on blocks if simultaneously in development				
L	Design sustainment strategy considering initial and following blocks				
M	Identify, monitor and manage technologies for following blocks				

List of Acronyms

ACAT	Acquisition Category
APB	Acquisition Program Baseline
CAIV	Cost as an Independent Variable
EA	Evolutionary Acquisition
FYDP	Five Year Defense Plan
MDA	Milestone Decision Authority
ORD	Operational Requirements Document
O&S	Operations and Support
PM	Program Manager
PPBS	Planning, Programming, and Budgeting System
R-TOC	Reduction of Total Ownership Costs
SEMP	Systems Engineering Master Plan
TEMP	Test and Evaluation Master Plan
TOC	Total Ownership Costs